

METHOD AND SYSTEM FOR IMPROVING DATA TRANSMISSION AND STORAGE OF MARKUP LANGUAGE DOCUMENTS

CROSS-REFERENCE TO RELATED APPLICATIONS

Not Applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

FIELD OF THE INVENTION

The present invention relates generally to a method for compressing data in a computer system, and more particularly, to such a method and system that improves the transmission and storage of documents that utilize markup languages.

BACKGROUND OF THE INVENTION

Markup languages provide formatting information necessary for Web browsers to display documents found on the World Wide Web within the Internet. Commonly used markup languages include Hypertext Markup Language (HTML) and Extensible Markup Language (XML). A document formatted or written in a markup language contains two types of information - formatting information and content information. "Markup" refers to sets of commands or tags that describe to the web browser how to format and layout content information on a page. The content data consists of readable information characters typically encoded according to the American Standard for Information Interchange (ASCII) that is actually displayed to a user. The markup commands or "tags" typically consist of multiple ASCII characters that describe the format for the content information to be displayed. For example, a tag for creating a table in a document would

start with an opening tag <TABLE> followed by the content information for the table and then closed by an end tag </TABLE>.

As markup language documents are transmitted and stored on the World Wide Web, their binary representations may be compressed to facilitate efficient transmission of the data. Conventional compression techniques reduce the size of the binary markup language document representation that reduces the time required to transmit and the space required to store the document. Each character within a markup language document is weighed equally when converted to its binary representation. Many markup tags, however, contain multiple characters to describe a particular format type. For example, using the tag (FONT FACE = "ARIAL" SIZE = 2 COLOR = "#339966") describes the font, its size and color for text to be displayed to the user. Each character within that markup tag would be translated to a binary representation that would be further compressed using conventional compression algorithms. However, using multiple characters to establish a particular format takes up more storage and requires a larger bandwidth to transmit such a document. Furthermore, many markup tags are necessary to properly display a document resulting in an increased amount of storage necessary to store such a document and to transmit the document.

Markup language tags having multiple characters to represent certain formats are said to exhibit a high degree of redundancy or a low information entropy. This leads to data representing character formats having the same "value" as the character information itself. This result produces a document with many formatting characters associated with a fewer number of information characters. Currently, there is no meaningful method for describing the markup language tags in proper proportion to the content data. For example, to show a bold character you would need the

opening tag the character data, and the closing tag . Thus, describing character data in a bold format would require seven characters to do so.

Low bandwidth applications or transmission systems sending large amounts of information require efficient compression of information to the maximum extent possible. Current compression techniques suitable for applications that do not have bandwidth limitations may continue to be acceptable solutions for that environment. However, narrow bandwidth applications require additional methods and techniques to optimize compression of data and its associated formatting information to achieve efficient transmission. One such narrow bandwidth application is transmitting information via satellite where bandwidth space is limited.

Current compression techniques are also adequate to serve hardware configurations having large amounts of memory to store markup language documents. However, as more devices are introduced to receive markup language files and display such information to a user, space may become limited in such devices. These devices may include hand-held personal data assistants (PDAs) or a cellular telephones.

Accordingly, there exists a need to optimize the storage and transmission of documents formatted in markup languages. Moreover, there is a need for such a method that is more efficient, more economical and faster than conventional methods for compressing data in a markup language format.

SUMMARY OF THE INVENTION

Generally described, a method in a computer system for improving data transmission of markup language documents that includes markup tags and information characters is provided. In accordance with the method, markup tags in the document are converted to tokens and a token

stream is created. The token stream is then compressed using a compression algorithm. Then, the token stream is decompressed using the compression algorithm and the markup tags are recreated from the token stream.

In another aspect of the present invention, a method in a computer system is provided for improving data transmission of markup language documents. The method includes converting markup tags to tokens and creating a token stream.

A method and system are provided for improving the transmission and storage of documents utilizing markup languages. The system converts the markup language tags to tokens and combines the tokens with the content information to create a token stream. The token stream is further compressed and stored on a device or transmitted over a communications network. The compressed token stream may then be decompressed and de-tokenized to return the markup language document to its original content form. The method may be performed on a computing device or over the transmission network.

BRIEF DESCRIPTION OF THE DRAWINGS

The objectives and advantages of the present invention will become readily apparent to those skilled in the art from the following detailed description of the drawings, in which:

FIG. 1 is a block diagram illustrating a computing environment for implementing the present invention;

FIG. 2 is a block diagram illustrating a network environment for implementing the present invention;

FIG. 3 is a block diagram further illustrating network environment in FIG.2 for practicing the present invention; and

FIG. 4 is a flow diagram illustrating a preferred method for improving data transmission and storage of markup language documents in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

5 The present invention provides a method and system for improving the transmission and storage of documents utilizing markup languages. FIG. 1 is a block diagram illustrating a typical computing device 10 in which invention may be implemented. The computing device 10 is an example of a suitable computing environment and is not intended to suggest any limitation as to the scope of use or functionality of the present invention. The present invention is operational with numerous general purpose or special purpose computer systems. Examples of well known computing systems that are suitable for use with the present invention include, but are not limited to, personal computers, server computers, hand-held or laptop devices, multiprocessor systems, microprocessor-based systems, programable consumer electronics, network PCs, mini computers, mainframe computers, distributed computing environments that include any of the above systems or devices, and the like.

15 The invention may be described in the general context of computer-executable instructions such as program modules, being executed by a computer. Generally, program modules include routines, programs, objects, components and data structures, that perform particular tasks or implement particular abstract data types. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may
20 be located in both local and remote computer storage media including memory storage devices.

Referring back to FIG. 1, computing device 10 typically includes memory 12, processor 14, and input/output interface 16. Input/output interface 16 may include a number of input devices such as a keyboard, mouse, pen, voice input devices or touch input devices. The input/output interface 16 may also include various output devices including a display, speakers, or a printer. The input/output interface 16 also includes communications connections that allow the computing device to communicate with other devices. The communication connections may include numerous communication media. Communication media may include, but are not limited to, wired media such as a wire network or direct wire connection, and wireless media such as acoustic, RF, infrared and other wireless media.

As described in greater detail below, the present invention may be implemented in a single computing device or across multiple computing devices through a computer network. As shown in FIG. 2, a block diagram illustrates multiple devices 18 in communication with one another either through a network 20 or through a direct communication link between the devices 18. The devices 18 may be personal computers, servers, routers, network PCs, peer devices, or common network nodes, and they typically include many or all of the elements described above relative to the computing device 10 in FIG. 1. The present invention may be performed using a preferred method that is described in greater detail below using one device or across multiple devices within a network. FIG. 3 is a block diagram illustrating a preferred network embodiment for practicing the method of the present invention. As devices 18 (FIG. 2) are coupled with a network 20, the network 20 may include servers 22 that are in communication with one another. The communication may be implemented through a series of wired connections 24 or may be a wireless type connection through a satellite network 26. As would be understood, devices 18 (FIG. 2) may also be in direct

communication with the satellite network 26 to facilitate direct communication between two or more devices 18. Alternatively, devices 18 may be in communication directly with a satellite network 26 to communicate with a server 22 that in turn communicates with another device 18. Combinations of the above are all included within the scope of the present invention.

5 FIG. 4 is a flow diagram illustrating a preferred method for improving data transmission and storage of markup language documents. At step 30, the system converts the tags within the markup language document to tokens. As mentioned above, two types of information are typically included in markup language documents. First, content information that includes the readable information characters that the user sees and secondly, the markup instructions or tags that tell the displaying program how to visually represent the content information characters. The content information characters within the document may be considered to already each be a single token. Converting the tags to tokens is accomplished by parsing the document, according to well known techniques, to recognize the markup language tags. A lookup table is then utilized by the system to match the markup language tags to an appropriate token.

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15 At step 32, the system creates a token stream from the converted markup tags and the non-tag characters. The token stream is placed into another document. At step 34, the token stream is compressed by encoding the sequence of tokens into transmittable symbols. Each symbol is a unique sequence of binary bits. The symbol sequences are not all the same size and are carefully chosen so that those symbols that appear most frequently are encoded with the fewest bits.
20 Furthermore, the bit streams are such that no concatenation of valid strings can be confused with some other string and that no initial substring of a valid string is equal to a shorter valid string. A variety of well known compression algorithms may be employed to compress the token stream.

Huffman coding is a preferred compression technique. A slight improvement may be realized by using a similar technique, arithmetic coding, to compress the token stream. Additional compression encoding methods include substitution codes such as LZ77, LZ78, and LZW.

At this point, the compressed string of binary information is ready for transmission.

5 Systems receiving this binary representation decompress the binary stream and recreate the markup language document at the receiving system.

At step 36, the token stream is decompressed at the receiving system by performing the same encoding algorithm used in the compression at step 34. At step 38, the markup tags are recreated utilizing the same table used to create the original token stream resulting in a markup language document having tags and content character information. Markup languages are not case sensitive and are not sensitive to placement of spaces within the tags. As such, the case and precise spacing of information within the tag is discarded when creating the token stream at step 32. This may result in a reproduced document, at step 38, that differs in these attributes from the original document. However, the reproduced document has the exact same semantic meaning and produces the same display representation for the user.

In another embodiment, the markup recreation at step 38 may not be needed. As a first step in creating or converting the markup tags to tokens, the document must be parsed to recognize the tag information and create a document containing the resulting tokens. A markup language viewing or printing program may be programmed to recognize the token stream instead of the markup language tags. In other words, the displaying of the content information is driven by the token stream and not the markup tags. However, most viewing and printing programs must have

the capability of displaying documents using markup tags and thus will have to retain the ability to parse the token stream to recreate the markup tags.

As mentioned above, a table is utilized to assign the markup language tags to tokens. This token look-up table assigns token values to each sequence of characters representing a tag. For example, HTML tags include a start tag, an end tag, and HTML attributes that are each assigned to a particular token. Further, this token look-up table is extensible to include XML tags and their corresponding attributes created by users. Additionally, the extensible nature of this table allows for future expansion of new HTML tags and other unforeseen markup language tags and attributes. That is, the extensible nature of the token look-up table allows users to expand the table. A preferred embodiment does this by reserving a number of token codes for definition by the tag to token converter. Table A provided below illustrates a preferred token look-up table. The table assigns content characters, tag, and attribute names to token values. No particular sequence of assignments is optimal, and thus, the table is completely arbitrary and one assignment is as good as any.

Table B provided below illustrates a token compression table utilized by the compression algorithm created by the compression algorithm as described above at step 34. This table takes the token stream and creates an appropriate Huffman code. The assignment of the variable length bit strings to token values is critical to the performance of a preferred method. The assignments in the compression table are chosen based upon the statistical frequencies of the various tokens encountered in an actual sample of HTML and XML coded documents.

In operation, a user creates a HTML or XML document that is placed on the internet or the World Wide Web. The document is made available on the web and the markup language tags within the document are converted to tokens utilizing the algorithm stated above. The converted tags

are combined with the character information to create a token stream. This token stream is further compressed using a of substitution code, preferably Huffman coding. The document is now compressed to the point where limited bandwidth applications may be able to transmit and receive the document. One such example of a narrow bandwidth application is transmitting documents via a satellite network. Users receiving the document then decompress the document using the same Huffman code. Then, the markup tags are recreated using the same algorithm to create the tokens. The document is now ready for display at the receiving units or receiving device location.

The present invention provides a number of advantages. Tokenizing the HTML code extracted from the World Wide Web has measured a 25% compression improvement over standard compression methods alone. When tested with a sample of 500 HTML and XML files extracted from the World Wide Web, the tokenizing process on average, converted each 1000 characters of HTML source code to 832 tokens. Thus, the tokenizing step alone can compress the size of the document's binary representation. Further converting the markup language tags to tokens gives the tag information the same semantic weight as the character content information. Thus, the same document can be compressed to a higher degree resulting in a smaller file and faster transmission.

Although the invention has been described with reference to a preferred embodiment as illustrated in the attached drawing figures, it is noted that substitutions may be made and equivalents employed herein without departing from the scope of the invention as recited in the claims.

Table A.

Token (hexadecimal)	Symbol
0x000	Content Code 0x00
0x001	Content Code 0x01
0x002	Content Code 0x02
0x003	Content Code 0x03
0x004	Content Code 0x04
0x005	Content Code 0x05
0x006	Content Code 0x06
0x007	Content Code 0x07
0x008	Content Code 0x08
0x009	Content Code 0x09
0x00A	Content Code 0x0A
0x00B	Content Code 0x0B
0x00C	Content Code 0x0C
0x00D	Content Code 0x0D
0x00E	Content Code 0x0E
0x00F	Content Code 0x0F
0x010	Content Code 0x10
0x011	Content Code 0x11
0x012	Content Code 0x12
0x013	Content Code 0x13
0x014	Content Code 0x14
0x015	Content Code 0x15
0x016	Content Code 0x16
0x017	Content Code 0x17
0x018	Content Code 0x18
0x019	Content Code 0x19
0x01A	Content Code 0x1A

0x01B	Content Code 0x1B
0x01C	Content Code 0x1C
0x01D	Content Code 0x1D
0x01E	Content Code 0x1E
0x01F	Content Code 0x1F
0x020	Content Character " "
0x021	Content Character "!"
0x022	Content Character ""
0x023	Content Character "#"
0x024	Content Character "\$"
0x025	Content Character "%"
0x026	Content Character "&"
0x027	Content Character "'"
0x028	Content Character "("
0x029	Content Character ")"
0x02A	Content Character "*"
0x02B	Content Character "+"
0x02C	Content Character ","
0x02D	Content Character "-"
0x02E	Content Character "."
0x02F	Content Character "/"
0x030	Content Character "0"
0x031	Content Character "1"
0x032	Content Character "2"
0x033	Content Character "3"
0x034	Content Character "4"
0x035	Content Character "5"
0x036	Content Character "6"
0x037	Content Character "7"

0x038	Content Character "8"
0x039	Content Character "9"
0x03A	Content Character ":"
0x03B	Content Character ";"
0x03C	Content Character "<"
0x03D	Content Character "="
0x03E	Content Character ">"
0x03F	Content Character "?"
0x040	Content Character "@"
0x041	Content Character "A"
0x042	Content Character "B"
0x043	Content Character "C"
0x044	Content Character "D"
0x045	Content Character "E"
0x046	Content Character "F"
0x047	Content Character "G"
0x048	Content Character "H"
0x049	Content Character "I"
0x04A	Content Character "J"
0x04B	Content Character "K"
0x04C	Content Character "L"
0x04D	Content Character "M"
0x04E	Content Character "N"
0x04F	Content Character "O"
0x050	Content Character "P"
0x051	Content Character "Q"
0x052	Content Character "R"
0x053	Content Character "S"
0x054	Content Character "T"

0x055	Content Character "U"
0x056	Content Character "V"
0x057	Content Character "W"
0x058	Content Character "X"
0x059	Content Character "Y"
0x05A	Content Character "Z"
0x05B	Content Character "["
0x05C	Content Character "\"
0x05D	Content Character "]"
0x05E	Content Character "^"
0x05F	Content Character "_"
0x060	Content Character "`"
0x061	Content Character "a"
0x062	Content Character "b"
0x063	Content Character "c"
0x064	Content Character "d"
0x065	Content Character "e"
0x066	Content Character "f"
0x067	Content Character "g"
0x068	Content Character "h"
0x069	Content Character "i"
0x06A	Content Character "j"
0x06B	Content Character "k"
0x06C	Content Character "l"
0x06D	Content Character "m"
0x06E	Content Character "n"
0x06F	Content Character "o"
0x070	Content Character "p"
0x071	Content Character "q"

0x072	Content Character "r"
0x073	Content Character "s"
0x074	Content Character "t"
0x075	Content Character "u"
0x076	Content Character "v"
0x077	Content Character "w"
0x078	Content Character "x"
0x079	Content Character "y"
0x07A	Content Character "z"
0x07B	Content Character "{"
0x07C	Content Character " "
0x07D	Content Character "}"
0x07E	Content Character "~"
0x07F	Content Code 0x7F
0x080	Content Code 0x80
0x081	Content Code 0x81
0x082	Content Code 0x82
0x083	Content Code 0x83
0x084	Content Code 0x84
0x085	Content Code 0x85
0x086	Content Code 0x86
0x087	Content Code 0x87
0x088	Content Code 0x88
0x089	Content Code 0x89
0x08A	Content Code 0x8A
0x08B	Content Code 0x8B
0x08C	Content Code 0x8C
0x08D	Content Code 0x8D
0x08E	Content Code 0x8E

0x08F	Content Code 0x8F
0x090	Content Code 0x90
0x091	Content Code 0x91
0x092	Content Code 0x92
0x093	Content Code 0x93
0x094	Content Code 0x94
0x095	Content Code 0x95
0x096	Content Code 0x96
0x097	Content Code 0x97
0x098	Content Code 0x98
0x099	Content Code 0x99
0x09A	Content Code 0x9A
0x09B	Content Code 0x9B
0x09C	Content Code 0x9C
0x09D	Content Code 0x9D
0x09E	Content Code 0x9E
0x09F	Content Code 0x9F
0x0A0	Content Code 0xA0
0x0A1	Content Code 0xA1
0x0A2	Content Code 0xA2
0x0A3	Content Code 0xA3
0x0A4	Content Code 0xA4
0x0A5	Content Code 0xA5
0x0A6	Content Code 0xA6
0x0A7	Content Code 0xA7
0x0A8	Content Code 0xA8
0x0A9	Content Code 0xA9
0x0AA	Content Code 0xAA
0x0AB	Content Code 0xAB

0x0AC	Content Code 0xAC
0x0AD	Content Code 0xAD
0x0AE	Content Code 0xAE
0x0AF	Content Code 0xAF
0x0B0	Content Code 0xB0
0x0B1	Content Code 0xB1
0x0B2	Content Code 0xB2
0x0B3	Content Code 0xB3
0x0B4	Content Code 0xB4
0x0B5	Content Code 0xB5
0x0B6	Content Code 0xB6
0x0B7	Content Code 0xB7
0x0B8	Content Code 0xB8
0x0B9	Content Code 0xB9
0x0BA	Content Code 0xBA
0x0BB	Content Code 0xBB
0x0BC	Content Code 0xBC
0x0BD	Content Code 0xBD
0x0BE	Content Code 0xBE
0x0BF	Content Code 0xBF
0x0C0	Content Code 0xC0
0x0C1	Content Code 0xC1
0x0C2	Content Code 0xC2
0x0C3	Content Code 0xC3
0x0C4	Content Code 0xC4
0x0C5	Content Code 0xC5
0x0C6	Content Code 0xC6
0x0C7	Content Code 0xC7
0x0C8	Content Code 0xC8

0x0C9	Content Code 0xC9
0x0CA	Content Code 0xCA
0x0CB	Content Code 0xCB
0x0CC	Content Code 0xCC
0x0CD	Content Code 0xCD
0x0CE	Content Code 0xCE
0x0CF	Content Code 0xCF
0x0D0	Content Code 0xD0
0x0D1	Content Code 0xD1
0x0D2	Content Code 0xD2
0x0D3	Content Code 0xD3
0x0D4	Content Code 0xD4
0x0D5	Content Code 0xD5
0x0D6	Content Code 0xD6
0x0D7	Content Code 0xD7
0x0D8	Content Code 0xD8
0x0D9	Content Code 0xD9
0x0DA	Content Code 0xDA
0x0DB	Content Code 0xDB
0x0DC	Content Code 0xDC
0x0DD	Content Code 0xDD
0x0DE	Content Code 0xDE
0x0DF	Content Code 0xDF
0x0E0	Content Code 0xE0
0x0E1	Content Code 0xE1
0x0E2	Content Code 0xE2
0x0E3	Content Code 0xE3
0x0E4	Content Code 0xE4
0x0E5	Content Code 0xE5

0x0E6	Content Code 0xE6
0x0E7	Content Code 0xE7
0x0E8	Content Code 0xE8
0x0E9	Content Code 0xE9
0x0EA	Content Code 0xEA
0x0EB	Content Code 0xEB
0x0EC	Content Code 0xEC
0x0ED	Content Code 0xED
0x0EE	Content Code 0xEE
0x0EF	Content Code 0xEF
0x0F0	Content Code 0xF0
0x0F1	Content Code 0xF1
0x0F2	Content Code 0xF2
0x0F3	Content Code 0xF3
0x0F4	Content Code 0xF4
0x0F5	Content Code 0xF5
0x0F6	Content Code 0xF6
0x0F7	Content Code 0xF7
0x0F8	Content Code 0xF8
0x0F9	Content Code 0xF9
0x0FA	Content Code 0xFA
0x0FB	Content Code 0xFB
0x0FC	Content Code 0xFC
0x0FD	Content Code 0xFD
0x0FE	Content Code 0xFE
0x0FF	Content Code 0xFF
0x100	HTML Tag "<A"
0x101	HTML Tag "<ABBR"
0x102	HTML Tag "<ACRONYM"

0x103	HTML Tag "<ADDRESS"
0x104	HTML Tag "<APPLET"
0x105	HTML Tag "<AREA"
0x106	HTML Tag "<B"
0x107	HTML Tag "<BASE"
0x108	HTML Tag "<BASEFONT"
0x109	HTML Tag "<BDO"
0x10A	HTML Tag "<BIG"
0x10B	HTML Tag "<BLOCKQUOTE"
0x10C	HTML Tag "<BODY"
0x10D	HTML Tag "<BR"
0x10E	HTML Tag "<BUTTON"
0x10F	HTML Tag "<CAPTION"
0x110	HTML Tag "<CENTER"
0x111	HTML Tag "<CITE"
0x112	HTML Tag "<CODE"
0x113	HTML Tag "<COL"
0x114	HTML Tag "<COLGROUP"
0x115	HTML Tag "<DD"
0x116	HTML Tag "<DEL"
0x117	HTML Tag "<DFN"
0x118	HTML Tag "<DIR"
0x119	HTML Tag "<DIV"
0x11A	HTML Tag "<DL"
0x11B	HTML Tag "<DT"
0x11C	HTML Tag "<EM"
0x11D	HTML Tag "<FIELDSET"
0x11E	HTML Tag "<FONT"
0x11F	HTML Tag "<FORM"

0x120	HTML Tag "<FRAME"
0x121	HTML Tag "<FRAMESET"
0x122	HTML Tag "<H1"
0x123	HTML Tag "<H2"
0x124	HTML Tag "<H3"
0x125	HTML Tag "<H4"
0x126	HTML Tag "<H5"
0x127	HTML Tag "<H6"
0x128	HTML Tag "<HEAD"
0x129	HTML Tag "<HR"
0x12A	HTML Tag "<HTML"
0x12B	HTML Tag "<I"
0x12C	HTML Tag "<IFRAME"
0x12D	HTML Tag "<IMG"
0x12E	HTML Tag "<INPUT"
0x12F	HTML Tag "<INS"
0x130	HTML Tag "<ISINDEX"
0x131	HTML Tag "<KBD"
0x132	HTML Tag "<LABEL"
0x133	HTML Tag "<LEGEND"
0x134	HTML Tag "<LI"
0x135	HTML Tag "<LINK"
0x136	HTML Tag "<MAP"
0x137	HTML Tag "<MENU"
0x138	HTML Tag "<META"
0x139	HTML Tag "<NOFRAMES"
0x13A	HTML Tag "<NOSCRIPT"
0x13B	HTML Tag "<OBJECT"
0x13C	HTML Tag "<OL"

0x13D	HTML Tag "<OPTGROUP"
0x13E	HTML Tag "<OPTION"
0x13F	HTML Tag "<P"
0x140	HTML Tag "<PARAM"
0x141	HTML Tag "<PRE"
0x142	HTML Tag "<Q"
0x143	HTML Tag "<S"
0x144	HTML Tag "<SAMP"
0x145	HTML Tag "<SCRIPT"
0x146	HTML Tag "<SELECT"
0x147	HTML Tag "<SMALL"
0x148	HTML Tag "<SPAN"
0x149	HTML Tag "<STRIKE"
0x14A	HTML Tag "<STRONG"
0x14B	HTML Tag "<STYLE"
0x14C	HTML Tag "<SUB"
0x14D	HTML Tag "<SUP"
0x14E	HTML Tag "<TABLE"
0x14F	HTML Tag "<TBODY"
0x150	HTML Tag "<TD"
0x151	HTML Tag "<TEXTAREA"
0x152	HTML Tag "<TFOOT"
0x153	HTML Tag "<TH"
0x154	HTML Tag "<THEAD"
0x155	HTML Tag "<TITLE"
0x156	HTML Tag "<TR"
0x157	HTML Tag "<TT"
0x158	HTML Tag "<U"
0x159	HTML Tag "<UL"

0x15A	HTML Tag "<VAR"
0x200	HTML End Tag ""
0x201	HTML End Tag "</ABBR>"
0x202	HTML End Tag "</ACRONYM>"
0x203	HTML End Tag "</ADDRESS>"
0x204	HTML End Tag "</APPLET>"
0x205	HTML End Tag "</AREA>"
0x206	HTML End Tag ""
0x207	HTML End Tag "</BASE>"
0x208	HTML End Tag "</BASEFONT>"
0x209	HTML End Tag "</BDO>"
0x20A	HTML End Tag "</BIG>"
0x20B	HTML End Tag "</BLOCKQUOTE>"
0x20C	HTML End Tag "</BODY>"
0x20D	HTML End Tag "</BR>"
0x20E	HTML End Tag "</BUTTON>"
0x20F	HTML End Tag "</CAPTION>"
0x210	HTML End Tag "</CENTER>"
0x211	HTML End Tag "</CITE>"
0x212	HTML End Tag "</CODE>"
0x213	HTML End Tag "</COL>"
0x214	HTML End Tag "</COLGROUP>"
0x215	HTML End Tag "</DD>"
0x216	HTML End Tag ""
0x217	HTML End Tag "</DFN>"
0x218	HTML End Tag "</DIR>"
0x219	HTML End Tag "</DIV>"
0x21A	HTML End Tag "</DL>"
0x21B	HTML End Tag "</DT>"

0x21C	HTML End Tag ""
0x21D	HTML End Tag "</FIELDSET>"
0x21E	HTML End Tag ""
0x21F	HTML End Tag "</FORM>"
0x220	HTML End Tag "</FRAME>"
0x221	HTML End Tag "</FRAMESET>"
0x222	HTML End Tag "</H1>"
0x223	HTML End Tag "</H2>"
0x224	HTML End Tag "</H3>"
0x225	HTML End Tag "</H4>"
0x226	HTML End Tag "</H5>"
0x227	HTML End Tag "</H6>"
0x228	HTML End Tag "</HEAD>"
0x229	HTML End Tag "</HR>"
0x22A	HTML End Tag "</HTML>"
0x22B	HTML End Tag "</I>"
0x22C	HTML End Tag "</IFRAME>"
0x22D	HTML End Tag ""
0x22E	HTML End Tag "</INPUT>"
0x22F	HTML End Tag "</INS>"
0x230	HTML End Tag "</ISINDEX>"
0x231	HTML End Tag "</KBD>"
0x232	HTML End Tag "</LABEL>"
0x233	HTML End Tag "</LEGEND>"
0x234	HTML End Tag ""
0x235	HTML End Tag "</LINK>"
0x236	HTML End Tag "</MAP>"
0x237	HTML End Tag "</MENU>"
0x238	HTML End Tag "</META>"

0x239	HTML End Tag "</NOFRAMES>"
0x23A	HTML End Tag "</NOSCRIPT>"
0x23B	HTML End Tag "</OBJECT>"
0x23C	HTML End Tag ""
0x23D	HTML End Tag "</OPTGROUP>"
0x23E	HTML End Tag "</OPTION>"
0x23F	HTML End Tag "</P>"
0x240	HTML End Tag "</PARAM>"
0x241	HTML End Tag "</PRE>"
0x242	HTML End Tag "</Q>"
0x243	HTML End Tag "</S>"
0x244	HTML End Tag "</SAMP>"
0x245	HTML End Tag "</SCRIPT>"
0x246	HTML End Tag "</SELECT>"
0x247	HTML End Tag "</SMALL>"
0x248	HTML End Tag ""
0x249	HTML End Tag "</STRIKE>"
0x24A	HTML End Tag ""
0x24B	HTML End Tag "</STYLE>"
0x24C	HTML End Tag "</SUB>"
0x24D	HTML End Tag "</SUP>"
0x24E	HTML End Tag "</TABLE>"
0x24F	HTML End Tag "</TBODY>"
0x250	HTML End Tag "</TD>"
0x251	HTML End Tag "</TEXTAREA>"
0x252	HTML End Tag "</TFOOT>"
0x253	HTML End Tag "</TH>"
0x254	HTML End Tag "</THEAD>"
0x255	HTML End Tag "</TITLE>"

0x256	HTML End Tag "</TR>"
0x257	HTML End Tag "</TT>"
0x258	HTML End Tag "</U>"
0x259	HTML End Tag ""
0x25A	HTML End Tag "</VAR>"
0x25B	HTML Tag closing ">"
0x400	HTML Attribute "ABBR"
0x401	HTML Attribute "ACCEPT-CHARSET"
0x402	HTML Attribute "ACCEPT"
0x403	HTML Attribute "ACCESSKEY"
0x404	HTML Attribute "ACTION"
0x405	HTML Attribute "ALIGN"
0x406	HTML Attribute "ALINK"
0x407	HTML Attribute "ALT"
0x408	HTML Attribute "ARCHIVE"
0x409	HTML Attribute "AXIS"
0x40A	HTML Attribute "BACKGROUND"
0x40B	HTML Attribute "BGCOLOR"
0x40C	HTML Attribute "BORDER"
0x40D	HTML Attribute "CELLPADDING"
0x40E	HTML Attribute "CELLSPACING"
0x40F	HTML Attribute "CHAR"
0x410	HTML Attribute "CHAROFF"
0x411	HTML Attribute "CHARSET"
0x412	HTML Attribute "CHECKED"
0x413	HTML Attribute "CITE"
0x414	HTML Attribute "CLASS"
0x415	HTML Attribute "CLASSID"
0x416	HTML Attribute "CLEAR"

0x417	HTML Attribute "CODE"
0x418	HTML Attribute "CODEBASE"
0x419	HTML Attribute "CODETYPE"
0x41A	HTML Attribute "COLOR"
0x41B	HTML Attribute "COLS"
0x41C	HTML Attribute "COLSPAN"
0x41D	HTML Attribute "COMPACT"
0x41E	HTML Attribute "CONTENT"
0x41F	HTML Attribute "COORDS"
0x420	HTML Attribute "DATA"
0x421	HTML Attribute "DATETIME"
0x422	HTML Attribute "DECLARE"
0x423	HTML Attribute "DEFER"
0x424	HTML Attribute "DIR"
0x425	HTML Attribute "DISABLED"
0x426	HTML Attribute "ENCTYPE"
0x427	HTML Attribute "FACE"
0x428	HTML Attribute "FOR"
0x429	HTML Attribute "FRAME"
0x42A	HTML Attribute "FRAMEBORDER"
0x42B	HTML Attribute "HEADERS"
0x42C	HTML Attribute "HEIGHT"
0x42D	HTML Attribute "HREF"
0x42E	HTML Attribute "HREFLANG"
0x42F	HTML Attribute "HSPACE"
0x430	HTML Attribute "HTTP-EQUIV"
0x431	HTML Attribute "ID"
0x432	HTML Attribute "ISMAP"
0x433	HTML Attribute "LABEL"

0x434	HTML Attribute "LANG"
0x435	HTML Attribute "LANGUAGE"
0x436	HTML Attribute "LINK"
0x437	HTML Attribute "LONGDESC"
0x438	HTML Attribute "MARGINHEIGHT"
0x439	HTML Attribute "MARGINWIDTH"
0x43A	HTML Attribute "MAXLENGTH"
0x43B	HTML Attribute "MEDIA"
0x43C	HTML Attribute "METHOD"
0x43D	HTML Attribute "MULTIPLE"
0x43E	HTML Attribute "NAME"
0x43F	HTML Attribute "NOHREF"
0x440	HTML Attribute "NORESIZE"
0x441	HTML Attribute "NOSHADE"
0x442	HTML Attribute "NOWRAP"
0x443	HTML Attribute "OBJECT"
0x444	HTML Attribute "ONBLUR"
0x445	HTML Attribute "ONCHANGE"
0x446	HTML Attribute "ONCLICK"
0x447	HTML Attribute "ONDBLCLICK"
0x448	HTML Attribute "ONFOCUS"
0x449	HTML Attribute "ONKEYDOWN"
0x44A	HTML Attribute "ONKEYPRESS"
0x44B	HTML Attribute "ONKEYUP"
0x44C	HTML Attribute "ONLOAD"
0x44D	HTML Attribute "ONMOUSEDOWN"
0x44E	HTML Attribute "ONMOUSEMOVE"
0x44F	HTML Attribute "ONMOUSEOUT"
0x450	HTML Attribute "ONMOUSEOVER"

0x451	HTML Attribute "ONMOUSEUP"
0x452	HTML Attribute "ONRESET"
0x453	HTML Attribute "ONSELECT"
0x454	HTML Attribute "ONSUBMIT"
0x455	HTML Attribute "ONUNLOAD"
0x456	HTML Attribute "PROFILE"
0x457	HTML Attribute "PROMPT"
0x458	HTML Attribute "READONLY"
0x459	HTML Attribute "REL"
0x45A	HTML Attribute "REV"
0x45B	HTML Attribute "ROWS"
0x45C	HTML Attribute "ROWSPAN"
0x45D	HTML Attribute "RULES"
0x45E	HTML Attribute "SCHEME"
0x45F	HTML Attribute "SCOPE"
0x460	HTML Attribute "SCROLLING"
0x461	HTML Attribute "SELECTED"
0x462	HTML Attribute "SHAPE"
0x463	HTML Attribute "SIZE"
0x464	HTML Attribute "SPAN"
0x465	HTML Attribute "SRC"
0x466	HTML Attribute "STANDBY"
0x467	HTML Attribute "START"
0x468	HTML Attribute "STYLE"
0x469	HTML Attribute "SUMMARY"
0x46A	HTML Attribute "TABINDEX"
0x46B	HTML Attribute "TARGET"
0x46C	HTML Attribute "TEXT"
0x46D	HTML Attribute "TITLE"

0x46E	HTML Attribute "TYPE"
0x46F	HTML Attribute "USEMAP"
0x470	HTML Attribute "VALIGN"
0x471	HTML Attribute "VALUE"
0x472	HTML Attribute "VALUETYPE"
0x473	HTML Attribute "VERSION"
0x474	HTML Attribute "VLINK"
0x475	HTML Attribute "VSPACE"
0x476	HTML Attribute "WIDTH"
0x500	HTML Attribute "ABBR" followed by "="
0x501	HTML Attribute "ACCEPT-CHARSET" followed by "="
0x502	HTML Attribute "ACCEPT" followed by "="
0x503	HTML Attribute "ACCESSKEY" followed by "="
0x504	HTML Attribute "ACTION" followed by "="
0x505	HTML Attribute "ALIGN" followed by "="
0x506	HTML Attribute "ALINK" followed by "="
0x507	HTML Attribute "ALT" followed by "="
0x508	HTML Attribute "ARCHIVE" followed by "="
0x509	HTML Attribute "AXIS" followed by "="
0x50A	HTML Attribute "BACKGROUND" followed by "="
0x50B	HTML Attribute "BGCOLOR" followed by "="
0x50C	HTML Attribute "BORDER" followed by "="
0x50D	HTML Attribute "CELLPADDING" followed by "="
0x50E	HTML Attribute "CELLSPACING" followed by "="
0x50F	HTML Attribute "CHAR" followed by "="
0x510	HTML Attribute "CHAROFF" followed by "="
0x511	HTML Attribute "CHARSET" followed by "="
0x512	HTML Attribute "CHECKED" followed by "="
0x513	HTML Attribute "CITE" followed by "="

0x514	HTML Attribute "CLASS" followed by "="
0x515	HTML Attribute "CLASSID" followed by "="
0x516	HTML Attribute "CLEAR" followed by "="
0x517	HTML Attribute "CODE" followed by "="
0x518	HTML Attribute "CODEBASE" followed by "="
0x519	HTML Attribute "CODETYPE" followed by "="
0x51A	HTML Attribute "COLOR" followed by "="
0x51B	HTML Attribute "COLS" followed by "="
0x51C	HTML Attribute "COLSPAN" followed by "="
0x51D	HTML Attribute "COMPACT" followed by "="
0x51E	HTML Attribute "CONTENT" followed by "="
0x51F	HTML Attribute "COORDS" followed by "="
0x520	HTML Attribute "DATA" followed by "="
0x521	HTML Attribute "DATETIME" followed by "="
0x522	HTML Attribute "DECLARE" followed by "="
0x523	HTML Attribute "DEFER" followed by "="
0x524	HTML Attribute "DIR" followed by "="
0x525	HTML Attribute "DISABLED" followed by "="
0x526	HTML Attribute "ENCTYPE" followed by "="
0x527	HTML Attribute "FACE" followed by "="
0x528	HTML Attribute "FOR" followed by "="
0x529	HTML Attribute "FRAME" followed by "="
0x52A	HTML Attribute "FRAMEBORDER" followed by "="
0x52B	HTML Attribute "HEADERS" followed by "="
0x52C	HTML Attribute "HEIGHT" followed by "="
0x52D	HTML Attribute "HREF" followed by "="
0x52E	HTML Attribute "HREFLANG" followed by "="
0x52F	HTML Attribute "HSPACE" followed by "="
0x530	HTML Attribute "HTTP-EQUIV" followed by "="

0x531	HTML Attribute "ID" followed by "="
0x532	HTML Attribute "ISMAP" followed by "="
0x533	HTML Attribute "LABEL" followed by "="
0x534	HTML Attribute "LANG" followed by "="
0x535	HTML Attribute "LANGUAGE" followed by "="
0x536	HTML Attribute "LINK" followed by "="
0x537	HTML Attribute "LONGDESC" followed by "="
0x538	HTML Attribute "MARGINHEIGHT" followed by "="
0x539	HTML Attribute "MARGINWIDTH" followed by "="
0x53A	HTML Attribute "MAXLENGTH" followed by "="
0x53B	HTML Attribute "MEDIA" followed by "="
0x53C	HTML Attribute "METHOD" followed by "="
0x53D	HTML Attribute "MULTIPLE" followed by "="
0x53E	HTML Attribute "NAME" followed by "="
0x53F	HTML Attribute "NOHREF" followed by "="
0x540	HTML Attribute "NORESIZE" followed by "="
0x541	HTML Attribute "NOSHADE" followed by "="
0x542	HTML Attribute "NOWRAP" followed by "="
0x543	HTML Attribute "OBJECT" followed by "="
0x544	HTML Attribute "ONBLUR" followed by "="
0x545	HTML Attribute "ONCHANGE" followed by "="
0x546	HTML Attribute "ONCLICK" followed by "="
0x547	HTML Attribute "ONDBLCLICK" followed by "="
0x548	HTML Attribute "ONFOCUS" followed by "="
0x549	HTML Attribute "ONKEYDOWN" followed by "="
0x54A	HTML Attribute "ONKEYPRESS" followed by "="
0x54B	HTML Attribute "ONKEYUP" followed by "="
0x54C	HTML Attribute "ONLOAD" followed by "="
0x54D	HTML Attribute "ONMOUSEDOWN" followed by "="

0x54E	HTML Attribute "ONMOUSEMOVE" followed by "="
0x54F	HTML Attribute "ONMOUSEOUT" followed by "="
0x550	HTML Attribute "ONMOUSEOVER" followed by "="
0x551	HTML Attribute "ONMOUSEUP" followed by "="
0x552	HTML Attribute "ONRESET" followed by "="
0x553	HTML Attribute "ONSELECT" followed by "="
0x554	HTML Attribute "ONSUBMIT" followed by "="
0x555	HTML Attribute "ONUNLOAD" followed by "="
0x556	HTML Attribute "PROFILE" followed by "="
0x557	HTML Attribute "PROMPT" followed by "="
0x558	HTML Attribute "READONLY" followed by "="
0x559	HTML Attribute "REL" followed by "="
0x55A	HTML Attribute "REV" followed by "="
0x55B	HTML Attribute "ROWS" followed by "="
0x55C	HTML Attribute "ROWSPAN" followed by "="
0x55D	HTML Attribute "RULES" followed by "="
0x55E	HTML Attribute "SCHEME" followed by "="
0x55F	HTML Attribute "SCOPE" followed by "="
0x560	HTML Attribute "SCROLLING" followed by "="
0x561	HTML Attribute "SELECTED" followed by "="
0x562	HTML Attribute "SHAPE" followed by "="
0x563	HTML Attribute "SIZE" followed by "="
0x564	HTML Attribute "SPAN" followed by "="
0x565	HTML Attribute "SRC" followed by "="
0x566	HTML Attribute "STANDBY" followed by "="
0x567	HTML Attribute "START" followed by "="
0x568	HTML Attribute "STYLE" followed by "="
0x569	HTML Attribute "SUMMARY" followed by "="
0x56A	HTML Attribute "TABINDEX" followed by "="

0x56B	HTML Attribute "TARGET" followed by "="
0x56C	HTML Attribute "TEXT" followed by "="
0x56D	HTML Attribute "TITLE" followed by "="
0x56E	HTML Attribute "TYPE" followed by "="
0x56F	HTML Attribute "USEMAP" followed by "="
0x570	HTML Attribute "VALIGN" followed by "="
0x571	HTML Attribute "VALUE" followed by "="
0x572	HTML Attribute "VALUETYPE" followed by "="
0x573	HTML Attribute "VERSION" followed by "="
0x574	HTML Attribute "VLINK" followed by "="
0x575	HTML Attribute "VSPACE" followed by "="
0x576	HTML Attribute "WIDTH" followed by "="
0x600	Single quote, closing an attribute value "
0x700	Double quote, within an attribute value '"
0x800	Carriage-return/Line-feed sequence
0x900	Start of dynamic token definition
0xA00 through 0xAFF	Reserved for dynamic assignment by compressor

Table B.

Token	Huffman Code
0x000	11000000100011100111000
0x001	11000000100011100111001
0x002	11000000100011100111010
0x003	11000000100011100111011
0x004	11000000100011100111100
0x005	11000000100011100111101
0x006	11000000100011100111110
0x007	11000000100011100111111
0x008	11000000100011101000000
0x009	1000110010
0x00A	110000001101101110
0x00B	11000000100011101000001
0x00C	11000000100011101000010
0x00D	110000001101101111
0x00E	11000000100011101000011
0x00F	11000000100011101000100
0x010	11000000100011101000101
0x011	11000000100011101000110
0x012	11000000100011101000111
0x013	11000000100011101001000
0x014	11000000100011101001001
0x015	11000000100011101001010
0x016	11000000100011101001011
0x017	11000000100011101001100
0x018	11000000100011101001101
0x019	11000000100011101001110
0x01A	11000000100011101001111

0x01B	11000000100011101010000
0x01C	11000000100011101010001
0x01D	11000000100011101010010
0x01E	11000000100011101010011
0x01F	11000000100011101010100
0x020	001
0x021	100011010
0x022	010001011
0x023	1101110111
0x024	110111110111000
0x025	0100010010
0x026	100001101
0x027	11011100
0x028	01110011
0x029	01111000
0x02A	110000001110
0x02B	110111011001
0x02C	0100011
0x02D	1111011
0x02E	111000
0x02F	111001
0x030	1111001
0x031	0111101
0x032	10110100
0x033	110010110
0x034	00010001
0x035	110111111
0x036	110010001
0x037	011100001

0x038	011100101
0x039	110000010
0x03A	11110001
0x03B	011100011
0x03C	100011000
0x03D	11011110
0x03E	100001100
0x03F	100001010
0x040	1000010110011
0x041	10110101
0x042	000100001
0x043	00010100
0x044	110010101
0x045	111100000
0x046	111100001
0x047	0111001000
0x048	1101110101
0x049	110010010
0x04A	11011111010
0x04B	01111001100
0x04C	101100110
0x04D	110010011
0x04E	100001001
0x04F	1100101001
0x050	10110001
0x051	011100010111
0x052	00010111
0x053	10110000
0x054	0001001

0x055	1100100000
0x056	10110011111
0x057	1101110100
0x058	011100010101
0x059	00010000001
0x05A	1011001110011
0x05B	1101110110000
0x05C	10110010
0x05D	1100101000001
0x05E	01110001011010111
0x05F	10000111
0x060	010001001100111110011
0x061	11111
0x062	010000
0x063	01001
0x064	110001
0x065	1010
0x066	100000
0x067	1100001
0x068	01101
0x069	0000
0x06A	110000000
0x06B	00010110
0x06C	01100
0x06D	110110
0x06E	10111
0x06F	0101
0x070	00011
0x071	0111100111

0x072	11101
0x073	11010
0x074	1001
0x075	100010
0x076	1011011
0x077	110011
0x078	00010101
0x079	1000111
0x07A	10000101101
0x07B	11000000111100
0x07C	1011001110001
0x07D	11000000110111
0x07E	110000001001
0x07F	11000000100011101010101
0x080	11000000100011101010110
0x081	11000000100011101010111
0x082	11000000100011101011000
0x083	11000000100011101011001
0x084	11000000100011101011010
0x085	1100000010000110101
0x086	11000000100011101011011
0x087	01111001101100010110
0x088	11000000100011101011100
0x089	11000000100011101011101
0x08A	11000000100011101011110
0x08B	11000000100011101011111
0x08C	11000000100011101100000
0x08D	11000000100011101100001
0x08E	11000000100011101100010

0x08F	11000000100011101100011
0x090	11000000100011101100100
0x091	0111000101100001
0x092	0001000001011
0x093	011110011011000101110
0x094	011110011011000101111
0x095	11000000100011101100101
0x096	0111000101101011001
0x097	011110011011000110000
0x098	11000000100011101100110
0x099	1100000011110110001
0x09A	11000000100011101100111
0x09B	11000000100011101101000
0x09C	11000000100011101101001
0x09D	11000000100011101101010
0x09E	11000000100011101101011
0x09F	11000000100011101101100
0x0A0	110000001000000
0x0A1	11000000100011101101101
0x0A2	11000000100011101101110
0x0A3	110000001111011100111
0x0A4	11000000100011101101111
0x0A5	11000000100011101110000
0x0A6	11000000100011101110001
0x0A7	11000000100001100
0x0A8	11000000100011101110010
0x0A9	1000010110010010101
0x0AA	11000000100011101110011
0x0AB	11000000100011101110100

0x0AC	11000000100011101110101
0x0AD	11000000100011101110110
0x0AE	11000000110110110
0x0AF	11000000100011101110111
0x0B0	1100000010000110100
0x0B1	11000000100011101111000
0x0B2	011110011011000110001
0x0B3	11000000100011101111001
0x0B4	11000000100011101111010
0x0B5	011110011011000110010
0x0B6	11000000100011101111011
0x0B7	11000000100011101111100
0x0B8	11000000100011101111101
0x0B9	11000000100011101111110
0x0BA	110111110111010111110
0x0BB	11000000100011101111111
0x0BC	11000000100011110000000
0x0BD	1100000010001110010110
0x0BE	11000000100011110000001
0x0BF	11000000100011110000010
0x0C0	11000000100011110000011
0x0C1	11000000100011110000100
0x0C2	11000000100011110000101
0x0C3	11000000100011110000110
0x0C4	011110011011000110011
0x0C5	011110011011000110100
0x0C6	11000000100011110000111
0x0C7	11000000100011110001000
0x0C8	11000000100011110001001

0x0C9	11000000100011110001010
0x0CA	11000000100011110001011
0x0CB	11000000100011110001100
0x0CC	11000000100011110001101
0x0CD	11000000100011110001110
0x0CE	11000000100011110001111
0x0CF	11000000100011110010000
0x0D0	11000000100011110010001
0x0D1	11000000100011110010010
0x0D2	11000000100011110010011
0x0D3	11000000100011110010100
0x0D4	11000000100011110010101
0x0D5	11000000100011110010110
0x0D6	1100000011110111000
0x0D7	11000000100011110010111
0x0D8	11000000100011110011000
0x0D9	11000000100011110011001
0x0DA	11000000100011110011010
0x0DB	11000000100011110011011
0x0DC	11000000100011110011100
0x0DD	11000000100011110011101
0x0DE	11000000100011110011110
0x0DF	11000000100011110011111
0x0E0	11000000100011110100000
0x0E1	11000000100011110100001
0x0E2	11000000100011110100010
0x0E3	11000000100011110100011
0x0E4	1100000010001110010111
0x0E5	1101111101110010110

0x0E6	11000000100011110100100
0x0E7	11000000100011110100101
0x0E8	11000000100011110100110
0x0E9	0100010011001111101
0x0EA	11000000100011110100111
0x0EB	11000000100011110101000
0x0EC	11000000100011110101001
0x0ED	11000000100011110101010
0x0EE	11000000100011110101011
0x0EF	11000000100011110101100
0x0F0	11000000100011110101101
0x0F1	11000000100011110101110
0x0F2	11000000100011110101111
0x0F3	11000000100011110110000
0x0F4	11000000100011110110001
0x0F5	11000000100011110110010
0x0F6	1000110110001110100
0x0F7	11000000100011110110011
0x0F8	11000000100011110110100
0x0F9	11000000100011110110101
0x0FA	11000000100011110110110
0x0FB	11000000100011110110111
0x0FC	010001001100001100
0x0FD	11000000100011110111000
0x0FE	11000000100011110111001
0x0FF	11000000100011110111010
0x100	1111010001
0x101	11000000100011110111011
0x102	11000000100011110111100

0x103	1101111101110101100
0x104	110000001000111000100
0x105	1011001110101
0x106	10001100111
0x107	100011011000111011
0x108	11000000100011110111101
0x109	11000000100011110111110
0x10A	100001011000010
0x10B	11011111011100110
0x10C	10001101100001
0x10D	1000110111
0x10E	11000000100011110111111
0x10F	110111110111010111111
0x110	11011101100011
0x111	10000101100010000
0x112	11011111011101111
0x113	110111110111011100000
0x114	011110011011000110101
0x115	01110010010
0x116	11000000100011111000000
0x117	11000000100011111000001
0x118	010001001100001101
0x119	11011111011101011010
0x11A	100011011011001000
0x11B	01110000000
0x11C	100011011000101
0x11D	11000000100011111000010
0x11E	100001000
0x11F	1000110110001111

0x13D	11000000100011111001010
0x13E	10110011110
0x13F	010001010
0x140	1101111101110010111
0x141	0111000101000010
0x142	11000000100011111001011
0x143	11000000100011111001100
0x144	11000000100011111001101
0x145	01111001101111
0x146	1000010110000110
0x147	1000110110111
0x148	110111110111011100010
0x149	11000000100011111001110
0x14A	011100100111
0x14B	1100000010001110011000
0x14C	011100010110000010
0x14D	01000100110000111
0x14E	1100000011111
0x14F	11000000100011111001111
0x150	110000011
0x151	11000000111101100111
0x152	11000000100011111010000
0x153	110000001100
0x154	11000000100011111010001
0x155	10001101101010
0x156	0111000100
0x157	011100010110101101
0x158	01110001011001
0x159	1101111101111

0x15A	1100000010001111010010
0x200	1111010000
0x201	1100000010001111010011
0x202	1100000010001111010100
0x203	110111101110101000
0x204	110000001000111000110
0x205	1100000010001111010101
0x206	10001100110
0x207	1100000010001111010110
0x208	1100000010001111010111
0x209	1100000010001111011000
0x20A	110111101110110
0x20B	1101111011100111
0x20C	10000101100011
0x20D	011110011011000110111
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